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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,859	07/09/2003	Yasuo Inoue	29284/598	8149

7590 08/19/2005

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EXAMINER

CHEN, ALAN S

ART UNIT	PAPER NUMBER
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2182

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/614,859

Applicant(s)

INOUE, YASUO

Examiner

Alan S. Chen

Art Unit

2182

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07/09/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 07/15/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

RD

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/15/2005 has been entered.
2. The indicated allowability of claims 1-14 made on 3/15/2005 in item 3 of the final office action is withdrawn in view of the reference(s) to O'Brien. Applicant's amendment made on 06/15/2005 broadening claim 1, where the paths linking the plurality of control units to the cache unit now only requires the number of paths being *at least* equal to the number of control units. O'Brien, while not showing a number of paths between the control units and the cache unit equals the number of control units, he does indeed show the number of paths being more than the control units (Fig. 1 and 2). Rejections based on the cited reference(s) follows.

Terminal Disclaimer

3. The terminal disclaimer filed on 06/15/2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Pat. Application #s: 10/614860, 10/614861, 10/614862, 10/614863 and 10/614864 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1-14 rejected under 35 U.S.C. 102(e) as being anticipated by No. 5,247,638 to O'Brien et al. (hereafter O'Brien).

6. As per claim 1, O'Brien discloses a storage system comprising: a channel unit (Fig. 1, element 110-0 and Fig. 2, element 201-0) that transfers data sent from an upper-level system (Fig. 1, element 11) and transfers data to said upper-level system (see abstract), a cache unit (Fig. 1, element 113) which is connected to said channel unit (Fig. 2, element 113 is connected to element 110) and in which data sent from said channel unit is stored (Column 7, lines 46-65); a plurality of control units (Fig. 1, element 111 and 112) that is connected to said cache unit (Fig. 1, element 113), and transfers or receives data to or from said cache unit (Fig. 2); a disk device in which data sent from said plurality of control units is stored (Fig. 1, element 102-1), and a plurality of paths (Fig. 1, paths between element 111, 112 and element 113), one of said paths (one path between each control unit 111, 112 and cache, 113) connecting each control unit to said cache unit), wherein a number of said paths linking said plurality of control units and said cache unit are *at least equal to the number* of said plurality of control units (Fig. 1, two paths, one for each control unit, each path a dedicated path to corresponding cache unit; Fig. 2 gives more detail to the path structure. Clearly, the control unit 111, demonstrating one of two control

Art Unit: 2182

units shown in Fig. 1, has a plurality of paths, shown in bold in Fig. 2, to the cache unit, element 113).

7. As per claim 2, O'Brien discloses claim 1, wherein said plurality of paths includes a first path (line between element 111 and 113) that links a first control unit (element 111) included in said plurality of control units (element 111 and 112) to said cache unit (element 113), and a second path (line between element 112 and 113) that links a second control unit (element 112) included in said plurality of control units to said cache unit (element 113).

8. As per claim 3, O'Brien discloses claim 2, wherein said first path and said second path are independent of each other (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

9. As per claim 4, O'Brien discloses claim 2, wherein said first path is dedicated to communication between said first control unit and said cache unit (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

10. As per claim 5, O'Brien discloses claim 4, wherein said second path is dedicated to communication between said second control unit and said cache unit (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

11. As per claim 6, O'Brien discloses claim 1, wherein among said plurality of paths, a path linking said cache unit (Fig. 1, element 113) and a predetermined control unit included in said plurality of control units is not the same as a path linking said cache unit and an other control

Art Unit: 2182

unit included in said plurality of control units (Fig. 1, paths are not connected/dependent, each path solely dedicated for each controller and corresponding cache unit).

12. As per claims 7 and 9, O'Brien discloses claim 2, wherein said first path directly links said first control unit to said cache unit (Fig. 1, path between elements 111 and 113).

13. As per claims 8 and 10, O'Brien discloses claims 7 and 9, respectively, wherein said second path directly links said second control unit to said cache unit on a point-to-point basis, with no split/fan-out in the path (Fig. 1, path between elements 112 and 113).

14. As per claim 11, O'Brien discloses claim 1, wherein said disk device includes a plurality of disk drives (Fig. 1, element 122-125), and said plurality of control units is connected to said plurality of disk drives (Fig. 1, element 121, plurality of control circuits).

15. As per claim 12, O'Brien discloses claim 1, wherein said plurality of paths are signal lines linking said cache unit and said plurality of control units (inherently paths carry electrical signals, paths are address, data and control lines as shown in Fig. 2).

16. As per claim 13, O'Brien discloses claim 1, wherein said plurality of paths are used to write data (Fig. 2), of which writing is requested by said upper-level system, from said cache unit to said disk device, and used to communicate data, of which writing is requested by said upper-level system, from said cache unit to said plurality of control units (Column 9, lines 33-39).

17. As per claim 14, O'Brien discloses claim 1, wherein said plurality of paths are used to read data (Fig. 2), of which reading is requested by said upper-level system, from said disk device, and are used to communicate data, of which reading is requested by said upper-level system, from said control unit to said cache unit (Column 9, lines 33-39).

Conclusion

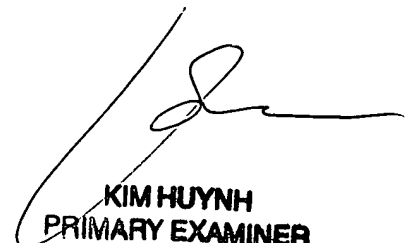
Art Unit: 2182

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan S. Chen whose telephone number is 571-272-4143. The examiner can normally be reached on M-F 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dov Popovici can be reached on (571) 272-4083. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ASC
08/16/2005


KIM HUYNH
PRIMARY EXAMINER
8/17/05